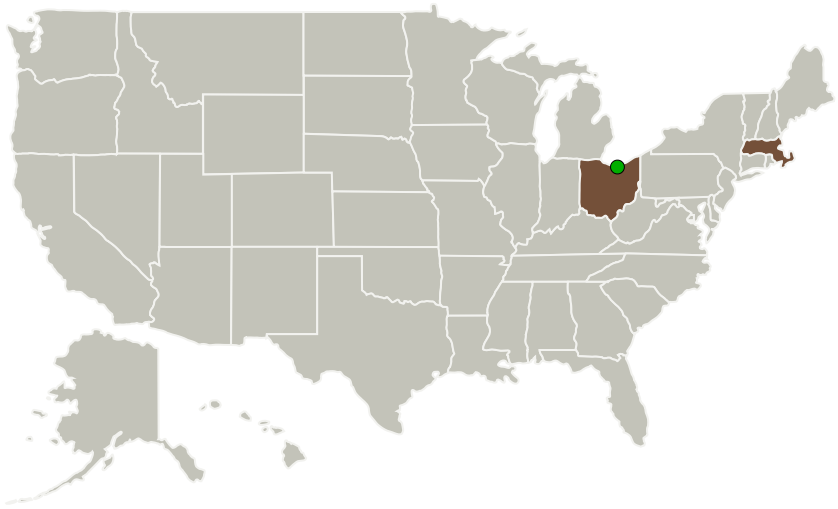
Low Mass Low Power Hall Thruster System, Phase I

Completed Technology Project (2010 - 2010)

Project Introduction

NASA is seeking electric propulsion systems capable of producing up to 20mN thrust, input power up to 1000W and specific impulse ranging from 1600-3500 seconds. The target mass is 1kg for the thruster and 2kg for the power processor unit (PPU). The proposed system will be based on a variant of our low power HET family, the NASA in-situ channel replacement technology for thruster life extension, and a simplified PPU based on our patented multi-functional single converter PPU. In Phase I Busek proposes to develop subsystem designs for the thruster/cathode, PPU and XFS and demonstrate through integrated testing a new power processing architecture that replaces the four main DC-DC converters of a typical PPU with a single multi-functional converter. A major activity of the Phase 1 effort will be the design, fabrication and test of a breadboard version of the multi-functional converter using our high efficiency power converter topology. In Phase II we will design and build engineering prototypes of each subsystem and conduct a TRL 6 integrated system demonstration. At the conclusion of the program the system will be delivered to GRC for extended duration testing in NASA facilities.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Busek Company, Inc.	Lead Organization	Industry Women-Owned Small Business (WOSB)	Natick, Massachusetts
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations	
Massachusetts	Ohio

Project Transitions

January 2010: Project Start

July 2010: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140030)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Busek Company, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Bruce Pote

Co-Investigator:

Bruce Pote

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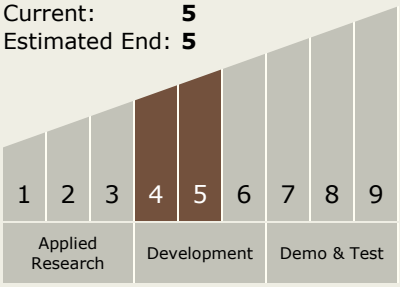
Technology Maturity (TRL)

Start: **4**
Current: **5**
Estimated End: **5**



Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.2 Electric Space Propulsion
    - TX01.2.2 Electrostatic

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System